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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,117	09/28/2004	Masaaki Takegami	4633-0126PUS1	1035

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BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER
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NALVEN, EMILY IRIS

ART UNIT	PAPER NUMBER
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3744

NOTIFICATION DATE	DELIVERY MODE
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05/14/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

# Office Action Summary

Application No.

10/509,117

Applicant(s)

TAKEGAMI ET AL.

Examiner

Emily I. Nalven

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date Sept. 28, 2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Refrigeration Circuit with Liquid and Gas Passageways and Oil Return.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

**Claims 1-4** are rejected under 35 U.S.C. 102(a) as being anticipated by Tanimoto et. al. (US Patent No. 6,698,217 B2).

**In regard to claim 1**, Tanimoto et. al. teach a refrigerating apparatus (1) in which a refrigerant circuit which performs a vapor compression refrigerating cycle (col 8 lines 25-29) is provided with an oil return passageway (31) through which refrigerating machine oil separated on the discharge side of the compressors (2A) is injected into the suction side of said compressors (2B, 2C) (see Fig. 1 and col 10 lines 64-657 and col 11 line 1) comprising a liquid injection passageway (10) (see Fig. 1 and col 9 lines 15-17) through which liquid refrigerant is injected into the suction side of said compressors (2A, 2B) (see Fig. 1 and col 9 lines 26-

28), wherein said oil return passageway (31) is connected to said liquid injection passageway (10) (see Fig. 1).

**In regard to claim 2**, Tanimoto et. al. teach a refrigerating apparatus (1) in which a refrigerant circuit which performs a vapor compression refrigerating cycle (col 8 lines 25-29) is provided with a gas injection passageway (8) through which gas refrigerant is injected into the suction side of the compressors (2A, 2B) (see Fig. 1 and col 9 lines 3-11) comprising a liquid injection passageway (10) (see Fig. 1 and col 9 lines 15-17) through which liquid refrigerant is injected into the suction side of said compressors (2A, 2B), wherein said gas injection passageway (8) is connected to said liquid injection passageway (10) (see Fig. 1).

**In regard to claim 3**, Tanimoto et. al. teach the refrigerating apparatus (1) comprising a heat source side unit (4) and utilization side (41, 45, 51) units being connected with one another (see Fig. 1) wherein the degree of superheat of suction refrigerant of said compressors (2A, 2B, 2C) is controlled by adjusting the rate of flow of refrigerant flowing through said liquid injection passageway (10) without operating expansion mechanisms provided in said utilization units (4) (see Fig. 1 and col 10 lines 43-53).

**In regard to claim 4**, Tanimoto et. al. teach the refrigerating apparatus (1) wherein said compressors (2B, 2C) are variable displacement compressors (col 8 lines 48-52) wherein said liquid injection passageway (10) is opened whenever the operating capacity of said compressors (2B, 2C) exceeds a predetermined value (col 13 lines 48-52).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-4** are rejected under 35 U.S.C. 102(b) as being anticipated by Kitamoto (US Patent No. 4,870,831).

**In regard to claim 1**, Kitamoto teaches a refrigerating apparatus (see Fig. 1) in which a refrigerant circuit which performs a vapor compression refrigerating cycle (abstract) is provided with an oil return passageway (42, 44) through which refrigerating machine oil separated on the discharge side of the compressors (1, 2) is injected into the suction side of said compressors (1, 2) (col 6 lines 4-13) comprising a liquid injection passageway (3, 4) through which liquid refrigerant is injected into the suction side of said compressors (1, 2) (col 3 lines 53-60 and see Fig. 1), wherein said oil return passageway (42, 44) is connected to said liquid injection passageway (3, 4) (see Fig. 1).

**In regard to claim 2**, Kitamoto teaches a refrigerating apparatus (see Fig. 1) in which a refrigerant circuit which performs a vapor compression refrigerating cycle (abstract) is provided with a gas injection passageway (42, 44) through which gas refrigerant is injected into the suction side of the compressors (1, 2) comprising a liquid injection passageway (3, 4) through which liquid refrigerant is injected into the suction side of said compressors (1, 2) (col 3 lines

53-60), wherein said gas injection passageway (42, 44) is connected to said liquid injection passageway (3, 4) (see Fig. 1). A recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitations upon the claimed apparatus which differentiates it from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

**In regard to claim 3**, Kitamoto teaches the refrigerating apparatus (see Fig. 1) comprising a heat source side unit (7) (see Fig. 1 and col 3 lines 58-59) and utilization side units (6, 14, 24, 34) (col 3 line 58 and line 64) being connected with one another (see Fig. 1) wherein the degree of superheat of suction refrigerant of said compressors (1, 2) is controlled by adjusting the rate of flow of refrigerant flowing through said liquid injection passageway (3,4) without operating expansion mechanisms provided in said utilization units (6, 14, 24, 34) (col 4 lines 12-17). Electronically powered flow valves (11, 21, 31) control the quantity of liquid entering the liquid tank (9) therefore controlling the amount of liquid flowing through the liquid injection passageway (3,4) (see Fig. 1 and col 3 lines 59-61).

**In regard to claim 4**, Kitamoto teaches the refrigerating apparatus (Fig. 1) wherein said compressors (1, 2) are variable displacement compressors (col 3 lines 53-54) wherein said liquid injection passageway (3, 4) is opened whenever the operating capacity of said compressors (1, 2) exceeds a predetermined value (col 4 lines 12-17). The flow rate control valves (11, 21, 31) are controlled such to

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adjust the rate of cooling medium entering the liquid injection passageway which then enters the compressors (1, 2) (see Fig. 1 and col 4 lines 12-17).


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily I. Nalven whose telephone number is 571-272-3045. The examiner can normally be reached on Monday - Thursday 8 AM - 5:30 PM 44455r44rand on alternate Fridays 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emily Iris Nalven  
Art Unit 3744

  
CHERYL TYLER  
SUPERVISORY PATENT EXAMINER